

WHAT IS CLAIMED IS:

1. A computer-implemented method of selecting items for a project within a criteria, the method comprising the steps of:
 - inputting project information, including project criteria;
 - determining, with a computer, sets of items based on the project information that meet the criteria;
 - calculating for each set of items a set value;
 - selecting a set of items based on the calculated set values; and
 - displaying to a user the selected set of items that meet the project criteria.
2. The method of claim 1, wherein the items are stored in at least one database and each item has an associated first item value and second item value.
3. The method of claim 2, wherein the step of determining further comprises the step of calculating a first project value for the project based on the project information and the criteria, and the step of determining sets of items that are in compliance with the calculated first project value.
4. The method of claim 3, wherein the step of determining further comprises the step of iterating through combinations of first item values and determining sets

of items that are in compliance with the calculated first project value based on the iterated combinations.

5. The method of claim 4, wherein the step of determining further comprises the step of calculating a second project value for the project based on the project information, and wherein the step of iterating begins at a first combination of first item values based on the second project value.

6. The method of claim 5, wherein the at least one database further comprises a table comprising a plurality of second project values and associated combinations of first item values.

7. The method of claim 2, wherein each set value is a combination of the second item values associated with each set of items.

8. The method of claim 2, wherein the step of selecting further comprises the step of selecting a set of items with the lowest set value.

9. The method of claim 8, wherein the step of selecting further comprises the step of presenting a display of the set of items with the lowest set value.

10. The method of claim 3, wherein the first project value is a UA value.
11. The method of claim 5, wherein the second project value is a glazing area percentage.
12. The method of claim 2, wherein each first item value is a R-value.
13. The method of claim 2, wherein each second item value is an item cost.
14. The method of claim 1, wherein the criteria is established based on the inputted project information.
15. The method of claim 1, wherein the criteria comprises a portion of a building code.
16. The method of claim 3, wherein the building code is an energy code.
17. The method of claim 1, wherein the inputted project information comprises structural information.

18. The method of claim 17, wherein the structural information comprises information on main walls, ceilings, floors, basement walls, doors, glazing, slab perimeter, or crawl space walls.
19. The method of claim 3, wherein the inputted project information comprises mechanical equipment information.
20. The method of claim 19, wherein the mechanical equipment information comprises information on a forced air furnace, a boiler, a heat pump, or an air conditioner.
21. The method of claim 3, wherein the inputted project information comprises upgrade information, and wherein the step of calculating a first project value further comprises the step of increasing the first project value based on the upgrade information, and the step of redetermining sets of items that are in compliance with the increased first project value.
22. The method of claim 21, wherein the upgrade information includes information on at least one energy saving component.

23. The method of claim 22, wherein the upgrade information includes information indicating an efficiency percentage upgrade above the criteria.
24. The method of claim 21, further comprising the step of determining energy consumption information based on the selected set of items.
25. The method of claim 2, wherein each item comprises information on one of a type of building material or a type of building system.
26. The method of claim 21, wherein a type of building material is an insulation material.
27. The method of claim 3, further comprising the step of generating a bill of materials based on the selected set of items.
28. The method of claim 27, wherein the step of generating further comprises the step of displaying the total amount of items required to construct the project.
29. The method of claim 27, wherein the step of generating further comprises the step of displaying information on suppliers based on the bill of materials.

30. The method of claim 2, further comprising the step of updating the second item values.

31. The method of claim 30, wherein the step of updating further comprises the step of sending a document containing updated second item value information to an administrative server computer that is configured to update the at least one database.

32. The method of claim 2, wherein the database further includes contractor scheduling information, and further comprising the step of determining an installation schedule and associated costs for the selected set of items based on the contractor schedule information and installation costs.

33. A system for selecting a set of items that meet a given criteria when included within a project, the system comprising:

a central computer having a processor and an input device for receiving information on a project;

at least one database having a list of items that may be used in constructing the project and a first value for each of the items;

code for determining sets of the items that may be used in constructing the project;

code for calculating a total first values for each set of items;

code for selecting a set of items based on the calculated total first values; and
code for displaying to a user the selected set of items.

34. The system of claim 33, wherein each items is one of a building material and a building system, the project is a structure, each first value is a item cost, and each total first value is the sum material cost of a set of items.

35. The system of claim 33, wherein the code to select a set of items selects the set of items with the lowest total first value.

36. A system as in claim 34, wherein the items comprise different types of insulation, wherein the criteria is an energy code that uses a UA value for a given structure, and further comprising code to calculate a UA value based at least in part on input structure information, and code to determine sets of insulation that may be used in constructing the structure in compliance with the UA value.

37. A system as in claim 36, wherein the at least one database further includes glazing area percentages and associated items that may be used in constructing a structure while complying with the energy code, and further comprising code to calculate at least one glazing area percentage for the structure based on the input

structure information, and code to determine the sets of items by first determining the items that are associated with the calculated glazing area percentage.

38. A system as in claim 37, further comprising code to evaluate combinations of other items that are associated with glazing area percentages that are closest in value to the calculated glazing area percentage.

39. A system as in claim 36, further comprising code to decrease the UA value by a certain percentage, and code to determine another lowest cost set of item based on the decreased UA value.

40. A system as in claim 39, wherein the at least one database includes climate control equipment information, and further comprising code to calculate energy consumption information based on the new lowest set of insulation and the climate control information.

41. A system as in claim 36, wherein the computer further includes input information on other energy saving components used in constructing the structure, and further comprising code to recalculate the UA value for the structure and to determine another lowest cost set of items based on the recalculated UA value.

42. A system as in claim 33, wherein the central computer comprises a network server computer and further comprising at least one user computer that is adapted to be coupled to the network server computer over a network to transmit the structure information to the network server computer.

43. A system as in claim 36, further comprising an administrative server computer that is adapted to receive updated material cost information and to update the at least one database with the updated material cost information.

44. A computer-implemented method for optimizing item costs used in an application within a given criteria, the method comprising the steps of:

inputting into a processor information on the project, including project criteria;

determining with the processor sets of items that may be used with the project that meet the given criteria;

calculating with the processor the cost of each set of items to determine a lowest cost set; and

producing a visual display of the lowest cost set.

45. A computer-implemented method for optimizing building material costs used in constructing a structure while complying with a given code, the method comprising the steps of:

inputting into a first computer having a processor information on the structure, including a code for the structure;

determining with the processor sets of building materials that may be used in constructing the structure while complying with the given code;

calculating with the processor the cost of each set of building materials to determine a lowest cost set; and

producing a visual display of the lowest cost set.

46. A method as in claim 45, wherein the building materials comprise different types of insulation that are stored in an at least one database, wherein the code comprises an energy code having a UA value for the structure that is determined based at least in part on the entered information, and further comprising determining sets of items that may be used in constructing the structure in compliance with the UA value.

47. A method as in claim 46, wherein the step of determining the lowest cost set of items comprises associating each item with a cost that is stored in the at least one database, summing the costs for each set, and comparing costs to determine the lowest cost set.

48. A method as in claim 46, wherein the at least one database further comprises glazing area percentages that are associated with items that may be used in constructing a structure while complying with the energy code, and further comprising calculating at least one glazing area percentage for the structure based on the input information, and wherein the step of determining the sets of items begins by first determining the items that are associated with the calculated glazing area percentage.

49. A method as in claim 48, wherein the step of determining the sets of items further comprises evaluating combinations of other items that are associated with glazing area percentages that are closest to the calculated glazing area percentage.

50. A method as in claim 45, wherein the information on the structure comprises various structural elements used to construct the structure and the configuration of the structure.

51. A method as in claim 50, wherein the structure information is selected from a group consisting of main walls, ceilings, floors, basement walls, slab perimeter and crawl space.

52. A method as in claim 46, wherein the input information further includes climate control equipment to be used in the structure, and further comprising calculating energy consumption information based on use of the lowest cost set of insulation and the input climate control equipment.

53. A method as in claim 52, further comprising decreasing the UA value by a certain percentage, and determining another lowest cost set of item based on the decreased UA value.

54. A method as in claim 53, further comprising calculating energy consumption information based on the new lowest set of insulation.

55. A method as in claim 46, further comprising entering information on other energy saving components used in constructing the structure, and further comprising recalculating the UA value for the structure and determining another lowest cost set of items based on the recalculated UA value.

56. A method as in claim 46, wherein the material types are defined by R-values, and further comprising displaying the R-values for each type of insulation in the lowest cost set.

57. A method as in claim 56, further comprising calculating and displaying the total amount of each type of insulation required in building the structure.

58. A method as in claim 45, wherein the step of producing the visual display comprises sending an electronic document from the processor to a second computer.

59. A method as in claim 45, wherein the step of inputting the structure information comprises receiving the information from an electronic document that was sent from a second computer.

60. A method as in claim 46, further comprising periodically updating the cost information.

61. A method as in claim 60, wherein the updating step comprises sending an electronic document containing the updated cost information to an administrative server computer that is configured to update the at least one database.

62. A method as in claim 46, wherein the at least one database further includes contractor scheduling information, and further comprising determining an installation schedule for the set of lowest cost items based on the contractor schedule information.

63. A method as in claim 62, further comprising periodically updating the scheduling information.

64. A method as in claim 63, wherein the updating step comprises sending an electronic document containing the updated scheduling information to an administrative server computer that is configured to update the at least one database.

65. A method as in claim 46, wherein the at least one database includes supplier information on suppliers that sell the items at a given cost, and further comprising determining a lowest cost supplier for the lowest cost set of insulation.

66. A computer-implemented method for optimizing building material costs used in constructing a structure while complying with a given code, the method comprising the steps of:

receiving at a network server computer having a processor information on a structure, including a code for the structure;

determining with the processor sets of building materials that may be used in constructing the structure while complying with the given code;

calculating with the processor the cost of each set of building materials to determine a lowest cost set; and

transmitting information on the lowest cost set to a user computer over a network.

67. A method as in claim 66, wherein the building materials comprise different types of insulation that are stored in a at least one database, wherein the code requirement comprises an energy code having a UA value for the structure that is determined based at least in part on the entered information, and further comprising determining sets of items that may be used in constructing the structure in compliance with the UA value.

68. A method as in claim 67, wherein the step of determining the lowest cost comprises associating each type of insulation with a cost, summing the costs for each set, and comparing costs to determine the lowest cost set.

69. A method as in claim 68, wherein the at least one database further includes glazing area percentages and associated items that may be used in constructing a structure while complying with the energy code, and further comprising calculating

at least one glazing area percentage for the structure based on the input information, and wherein the step of determining the sets of items begins by first determining the items that are associated with the calculated glazing area percentage.

70. A method as in claim 69, further comprising periodically receiving at the network server computer updated cost information.

71. A system for selecting a lowest set cost associated with a set of items that meet a given criteria, the system comprising:

- a central computer having a processor and an input device for receiving information on a structure, including compliance criteria information for the structure;

- at least one database having a list of items that may be used in constructing the structure and an item cost associated with each item;

- code to determine sets of the items that may be used in constructing the structure;

- code to calculate a set cost for each set of items;

- code to determine the lowest set cost; and

- code to present the lowest set cost information to a user.

72. A system as in claim 71, wherein the items comprise different types of insulation, wherein the criteria is an energy code that uses a UA value for a given structure, and further comprising code to calculate a UA value based at least in part on input structure information, and code to determine sets of insulation that may be used in constructing the structure in compliance with the UA value.

73. A system as in claim 72, wherein the at least one database further includes glazing area percentages and associated items that may be used in constructing a structure while complying with the energy code, and further comprising code to calculate at least one glazing area percentage for the structure based on the input structure information, and code to determine the sets of items by first determining the items that are associated with the calculated glazing area percentage.

74. A system as in claim 73, further comprising code to evaluate combinations of other items that are associated with glazing area percentages that are closest in value to the calculated glazing area percentage.

75. A system as in claim 72, further comprising code to decrease the UA value by a certain percentage, and code to determine another lowest cost set of item based on the decreased UA value.

76. A system as in claim 75, wherein the at least one database include climate control equipment information, and further comprising code to calculate energy consumption information based on the new lowest set of insulation and the climate control information.

77. A system as in claim 72, wherein the computer further includes input information on other energy saving components used in constructing the structure, and further comprising code to recalculate the UA value for the structure and to determine another lowest cost set of items based on the recalculated UA value.

78. A system as in claim 71, wherein the central computer comprises a network server computer and further comprising a user computer that is adapted to be coupled to the network server computer over a network to transmit the structure information to the network server computer.

79. A system as in claim 72, further comprising an administrative server computer that is adapted to receive updated material cost information and to update the at least one database with the updated material cost information.

80. The method of claim 2, wherein the criteria comprises an energy budget.

81. The method of claim 3, wherein the first project value is an energy baseline level.

82. The method of claim 25, wherein one of a type of building system is a HVAC system.

83. A system as in claim 34, wherein the criteria is an energy budget, and further comprising code to calculate a energy baseline level based at least in part on input structure information, and code to determine sets of insulation that may be used in constructing the structure in compliance with the energy baseline level.

84. The method of claim 2, further comprising the step of analyzing interactions between at least two of the items based on their associated first item values and second item values.

85. The method of claim 2, further comprising the step of analyzing interactions between at least one of the items and a structural component based on an associated first item value and second item value.

86. The method of claim 32, comprising the step of determining delay costs based on the determined installation schedule.

- 87. The method of claim 32, comprising the step of guaranteeing the achieving of a target requirement.
- 88. The method of claim 32, comprising the step of charging a fee.
- 89. The system of claim 33, wherein received project information is a CAD file.
- 90. The method of claim 58, wherein the second computer is a remote computer.
- 91. The method of claim 62, wherein the step of determining an installation schedule comprises the step of updating a master installation schedule.
- 92. The method of claim 56, comprising the step of generating a report showing thermal performance of the structure based on actual measured thermal performance of determined sets of items and energy saving components.